

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims

Please replace claims 1, 5, and 13 with the amended claims below. A "marked up" version the amendment is included in **Attachment A**.

1. (Currently Amended) A test fixture, comprising;

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a table moveable in a first direction, wherein the table is adapted to secure a substrate embodying a trace conductor having opposing ends terminating at respective opposing planar surfaces of the substrate; ~~and~~

a probe pin moveable in two directions perpendicular to the first direction, wherein the probe pin is adapted to contact a first one of the opposing ends; and

a probe needle adapted to contact a second one of the opposing ends.

2. (Canceled)

3. (Currently Amended) The test fixture of claim 1, further comprising a test device for sending and receiving signals to the probe needle and the probe pin.

4. (Original) The test fixture of claim 1, wherein the probe pin moves along axes parallel to and perpendicular to a planar surface on which said first one of the opposing ends is arranged for contacting an upwardly extending distal end of the probe pin with a downwardly extending said first one of the opposing ends.

5. (Previously Amended) A test fixture, comprising:

a pin retainer for retaining only one upwardly extending pin;

a semiconductor substrate retainer having a trace conductor with one end of the trace conductor arranged above the pin; and

a mechanism for moving the pin retainer and semiconductor substrate in two dimensions for aligning the probe pin onto said one end of the trace conductor.

6. (Original) The test fixture of claim 5, wherein an end opposite said one end of the trace conductor is adapted to receive a probe needle, and wherein a test device is coupled between the probe needle and the pin.

7. (Original) The test fixture of claim 6, wherein the test device forwards stimuli and receives response, during use, for testing integrity of the trace conductor.

8. (Original) The test fixture of claim 6, wherein the test device is a multi-meter for testing open circuit or short circuit conditions of the trace conductor.

9. (Original) The test fixture of claim 5, wherein the substrate retainer comprises:

a table;

a pair of elongated walls secured to the table and extending orthogonal to each other; and

a push plate slideably attached to the table for securing the substrate onto the table between the push plate and the pair of elongated walls.

10. (Original) The test fixture of claim 9, wherein the push plate is secured in position upon the table by a thumbscrew secure pin.

11. (Original) The test fixture of claim 5, wherein the mechanism comprises:

a first lead screw that, during rotational movement of the first lead screw, extends against the pin retainer; and

a second lead screw that, during rotational movement of the second lead screw, extends against the semiconductor substrate retainer.

12. (Original) The test fixture of claim 11, wherein the mechanism comprises a third lead screw that, during rotational movement of the third lead screw, extends the pin upward in a dimension perpendicular to the two dimensions in which the pin retainer and semiconductor substrate retainer move.

13. (Previously Amended) A method for testing a semiconductor package, comprising:

moving a substrate bearing a plurality of downwardly extending terminal ends of a trace conductor along an x-axis; and

moving an upwardly extending pin along a y-axis and a z-axis to make contact with only one of the plurality of downwardly extending terminal ends.

14. (Original) The method of claim 13, wherein prior to said moving steps, further comprising:

removing at least a portion of an integrated circuit bonded to an upper surface of the substrate; and

holding the substrate on a moveable table for exposing a backside surface of the substrate bearing the downwardly extending terminal end to the upwardly extending pin.

15. (Original) The method of claim 13, wherein after said moving steps, further comprising:

contacting a probe needle to an upwardly extending terminal end of the trace conductor opposite the downwardly extending terminal end;

applying electrical stimulus to the probe needle and the pin; and

measuring a response.

16. (Original) The method of claim 13, further comprising:

transmitting an electrical pulse along the trace conductor;

measuring a time delay of an ensuing reflected pulse; and

determining from the delay time a location of high resistance defect in the trace conductor as either residing inside or outside the substrate.

17. (Original) The method of claim 15, wherein said measuring comprises measuring electrical resistance of the trace conductor between the probe needle and the pin.

18. (Original) The method of claim 14, wherein said removing comprises grinding the integrated circuit.

19. (Original) The method of claim 14, wherein said holding comprises retaining the outer periphery of the substrate above the table by securing opposed outer portions of the substrate between a moveable sliding push plate and elongated walls mounted to the table.

20. (Canceled)
